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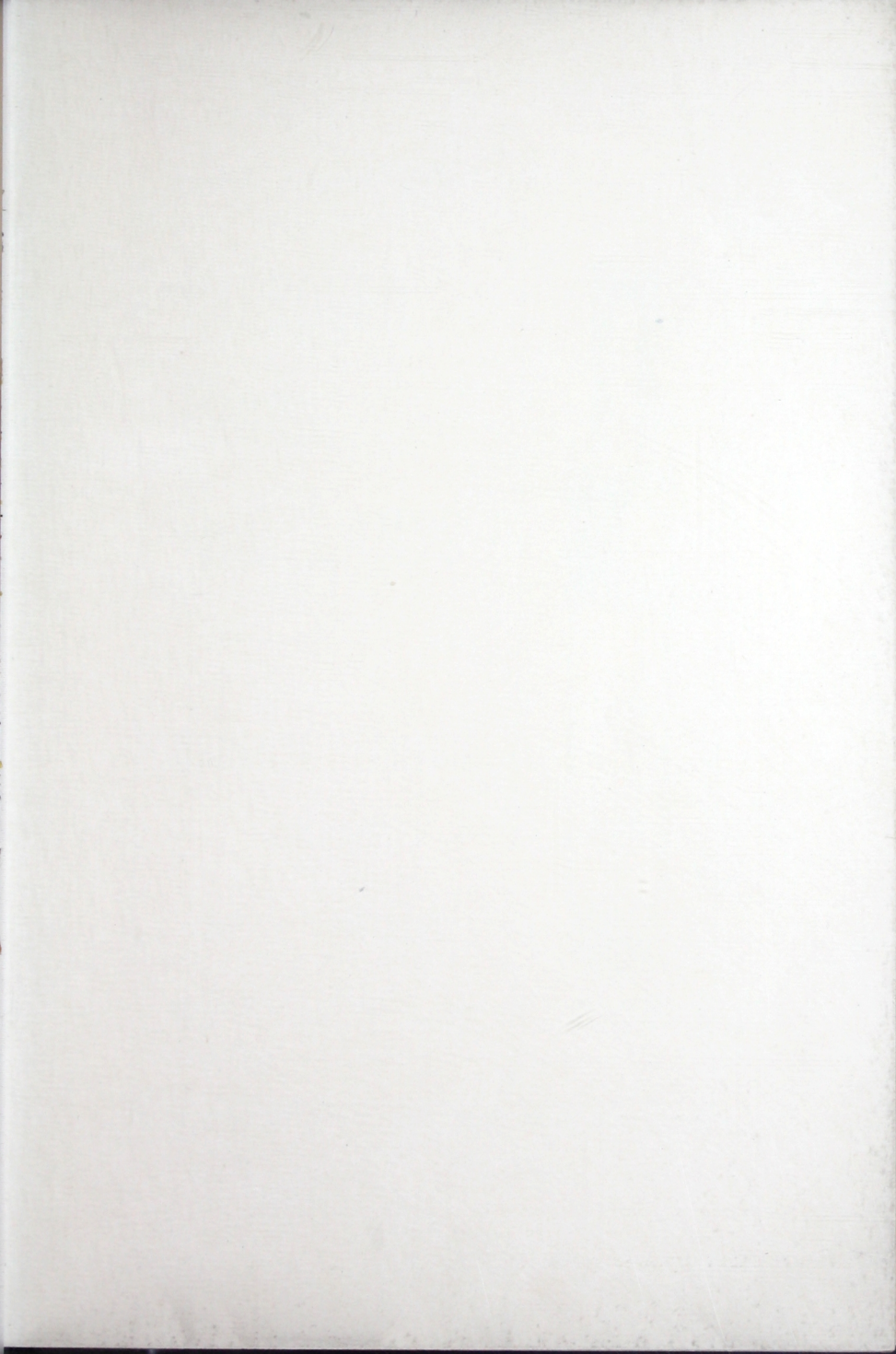
No. 1014

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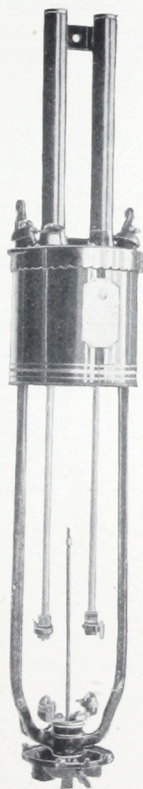
# IMPROVED BRUSH ARC LAMPS

GENERAL ELECTRIC  
COMPANY

SUPPLY DEPARTMENT

NO. 1014

JUNE 6, 1898



DOUBLE CARBON  
ARC LAMP



**A**MONG THE VARIOUS ESSENTIAL QUALIFICATIONS OF SATISFACTORY ARC LAMPS NONE ARE OF GREATER IMPORTANCE THAN DURABILITY OF WEARING PARTS AND FACILITY OF MAKING RENEWALS. HIGH ECONOMY IN OPERATION WILL SELDOM BALANCE A HEAVY REPAIR BILL OR COMPENSATE FOR TIME LOST IN REMOVING LAMPS TO THE SHOP FOR MAKING RENEWALS. WITH THE AIM OF PRODUCING A DURABLE LAMP WHOSE PARTS CAN BE EASILY RENEWED IF NECESSARY, WE HAVE RECENTLY DEVOTED CONSIDERABLE ATTENTION TO THE REDESIGNING OF OUR SINGLE AND DOUBLE CARBON BRUSH ARC LAMPS. WE FEEL CERTAIN THAT THE MARKED FAVOR SHOWN THESE LAMPS WHEREVER ECONOMY OF OPERATION AND GENERAL DURABILITY HAVE BEEN DESIRED, WILL BE INCREASED WHEN THE RECENT IMPROVEMENTS ARE FULLY UNDERSTOOD. WE, THEREFORE, SOLICIT A CAREFUL EXAMINATION OF THE FOLLOWING PAGES. † † † † † †



# IMPROVED BRUSH ARC LAMPS.



The Differential Arc Lamp has long been recognized as especially valuable wherever a large number of lamps are run from one generator. The differential winding consists of a coil of coarse wire in series with the arc and a fine wire coil connected around the arc. Current in the coarse wire works to

**Action  
of the  
Differential  
Windings**

separate the carbons while in the fine wire it operates to bring them together. The opposite forces exerted by the shunt and series windings are automatically balanced when the carbons are burning normally so that if the series

current is reduced the voltage at the lamp correspondingly diminishes. With differential lamps, generators can therefore be heavily overloaded. The Improved Brush Lamp is adjusted at the factory by filing the armature and, as the mechanism is not dependent upon springs for any of its movements, this adjustment cannot change. Hence the lamp will run as economically after several years of service as when first installed. It will regulate so closely that the volt-meter on a circuit of lamps

will show no appreciable variation.

**Adjustment  
of the  
Lamps**

The adjustment of the lamp may be changed after shipment, if desired, by means of the adjusting coil, which will compensate for a difference of about one ampere either more or less.

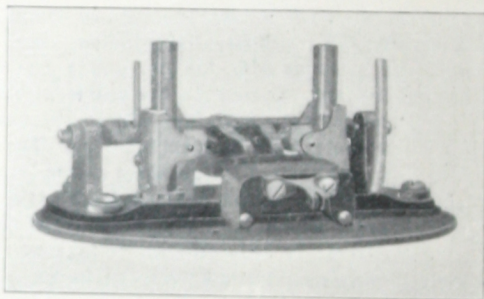
The Improved Brush Arc Lamps do not require hoods when hung outside, as all parts are thoroughly protected from the weather. The chimney and its base are cast in one piece and wherever a screw enters the lamp from above its head rests on a boss which prevents the entrance of rain or melted snow. The outside terminals of the lamp are made with petticoats as a further protection against the entrance of water.

All parts are made by special machinery and are interchange-

able. There are no springs to require adjusting or replacing. The various contact surfaces are ample and the insulation is so distributed that the danger of short circuits is eliminated. The use of one large insulating strip diminishes the number of insulation pieces required in securing the lower frame in position.

No solder is used in assembling the lamp and a screw driver is the only tool required to take it apart.

All brass parts, except the carbon rods, are finished in nickel plate which adds much to their durability as well as to the appearance of the lamp.



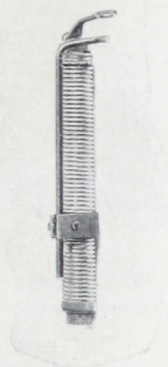
SUPPORT FOR ARMATURE LEVER.

The mechanism frame has been so modified that the armature lever is now supported by a base separate from the frame and mounted on a plate which insulates it entirely from the frame and zinc bottom of the lamp box.

The armature lever has been slightly changed on account of changes in other parts and also to so support the balance wire in the double lamps that the second carbon feeds at practically the same voltage as the first carbon. This improvement makes a marked saving during the entire second half of the night's run, often amounting to from 30 to 50 watts. The new armature lever will not interchange with those in the old lamps.

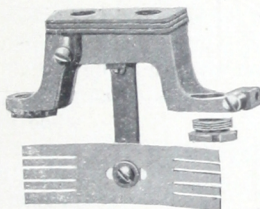
Realizing the advantage of being able to use a lamp on circuits of either 6.6 or 9.6 amperes we have so designed the magnets of this new lamp that when changing from one circuit to the other it is only necessary to exchange the adjusting coil for one suited to the new rating. The adjuster formerly sent out may be used for

1200 candle-power (6.6 amperes) but should be changed to one of coarser wire when used for 2000 candle-power (9.6 amperes). The new magnets are interchangeable in pairs with those of the old style, but new magnets for old 2000 candle-power lamps must always be used with the new adjuster for 2000 candle-power.



ADJUSTING COIL.

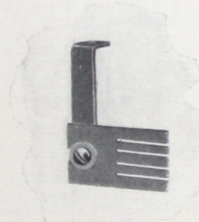
The new adjusting coil is furnished with a screw clip which compensates for about one ampere either more or less. When changing or renewing this adjusting coil it is necessary to loosen two screws. The magnets may be removed by simply taking out four screws and unhooking the small brass connection springs. The connection springs furnish a most convenient method of connecting the magnets into circuit and are



DOUBLE CARBON BRUSH AND INSIDE TERMINAL.

of such size wire that the current they carry cannot heat them enough to change their tension.

Allowance will be made for magnet cores, if returned with orders for new magnets.



SINGLE CARBON BRUSH.

Successful operation requires at all times a perfect contact between the rod and the inside terminal. It is necessarily a sliding contact and we have taken advantage of this fact and designed a brush that keeps the contact surface bright and clean. The new brush is one inch wide and is punched out of phosphor bronze and so slotted as to present five narrow fingers crosswise to the rod. The same punching is used on both single and double lamps, the double lamp requiring two strips, and the single lamp

one strip bent double as shown in the illustration.

When completely worn out the contact brush is quickly replaced without disturbing anything else in the lamp.

The improved contact is interchangeable with the old if the new contact support bracket is also used.

No part of an arc lamp is more affected by wear than the carbon rod. Each day the trimmer rubs the exposed portion of the rod and thus in time reduces its diameter so that the clutch opens more quickly than when the rod is full size. The new form of clutch makes the feeding of the lamp independent of changes in the diameter of the rod.

The wear caused by scouring is on the lower half of the rod, which is the part that rests in the bushings when new carbons are in the holders and the best alignment is necessary. To overcome any trouble due to excessive wear we have introduced a reversible rod which may be quickly removed, turned end for end, and put back into the lamp, the change being made with a screw-driver while the lamp is hanging in position. The reversible rod lasts twice as long as the old rod. It also prolongs the life of the contact brushes, the guide bushings and the clutches, because a rough or pitted rod will cause arcing and increased friction.

The rod caps are worthy of special attention. They may be held in place by a screw-driver or any flat piece of metal while the rod is unscrewed, and they are long enough to remain in position on the upper bushing when the rod has been removed.



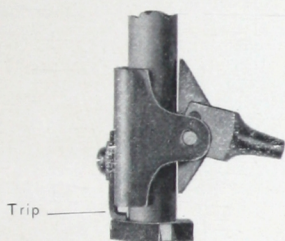
IMPROVED CLUTCH.

Two things are necessary in a satisfactory carbon rod clutch: absolute uniformity of grip irrespective of the condition of the rod, and a means of accurate adjustment for wear of the rod or clutch. Our improved clutch fulfils these requirements. The surfaces bearing on the rod are so long (1½") that the gripping is not affected by roughness, dirt, or even dents in the rod.

Our improved clutch holds the rod without wearing it because

the pressure is distributed over a large surface. To adjust the clutch the position of the trip is changed by loosening one screw.

The shoe is of peculiar construction, being pivoted above its center to a lever so pivoted to the clutch body as to give a motion



CLUTCH WITH ROD  
RELEASED.



CLUTCH SHOE SHOWING  
LOCATION OF PIVOTS.

to the shoe which is perpendicular to the rod when the lever moves vertically. In action this clutch is positive—releasing the rod at a given point and instantly gripping it again when the lever is raised. The rod is always either firmly clutched or entirely free to fall.

The simple construction of the clutch is obvious from the



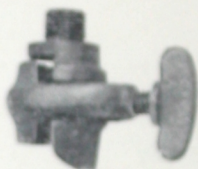
LOWER GUIDE BUSHING.

illustration. It comprises but four parts beside the screw and rivets.

The same clutch is used on both single and double lamps.

The bushings for guiding the carbon rods must be replaced occasionally, as a worn out bushing is more often a source of trouble than is commonly supposed. The bushings are screwed into place by means of a screw-driver or a light spanner wrench.

We have so modified the main inside terminal of our lamps that but a few minutes' work is required to replace a worn bushing. The carbon rod is removed from its cap, the bushing is unscrewed by tapping with a screw-driver, the new one inserted and the rod replaced.



UPPER CARBON HOLDER.

The new bushings cannot be used in the old lamps without a new inside terminal which may be substituted for the old terminal and thus admit the use of the new upper bushings.

The carbon holders are of the most approved form, having a V grip on the carbon. The upper holder is made in two sizes taking  $\frac{1}{16}$ " or  $\frac{1}{8}$ " carbons and  $\frac{1}{16}$ " or  $\frac{1}{8}$ " carbons respectively. It

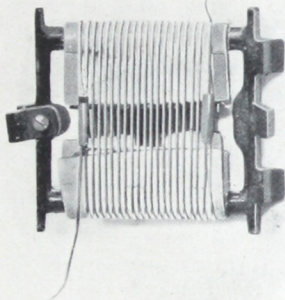


LOWER CARBON HOLDER.

may be supplied with a flange which will prevent injury to the rod in case of a flaming carbon. The lower carbon holder will take any size of carbon from  $\frac{1}{16}$ " to  $\frac{1}{8}$ " inclusive. Its position is adjustable. The holders are nickel plated which enables them to resist corrosion. The new upper carbon holder will not fit the non-reversible carbon rods, hence we have listed both forms in the appended Catalogue of Parts.

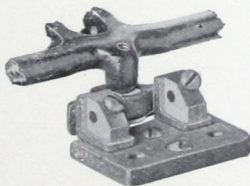
The same carbon holder is used on both single and double lamps.

The starting resistance is wound on a separate frame, which may be quickly removed, as only one screw with a metal clamp secures it to the side frame of the lamp mechanism.



STARTING RESISTANCE AND FRAME.

The cut-out in the Improved Brush Lamp is operated by the mechanical movement of the armature. When the current is too weak to energize the magnets, the armature falls by force of gravity



THE CUT-OUT.

which throws the cut-out into circuit. Its contact surfaces are broad and as they are vertical dust cannot collect on them to prevent good connection.

In cases of accident to the main circuit of the lamp, as breaking of the carbons, the whole current of the lamp would tend to

flow through the fine wire of the magnets before the armature would have time to drop and throw in the cut-out. To prevent any possible damage during this brief interval, an auxiliary cut-out is inserted which at such a time opens a path for the total current around the magnets until the main cut-out can operate, when the auxiliary cut-out is itself thrown out of the circuit.



AUXILIARY CUT-OUT

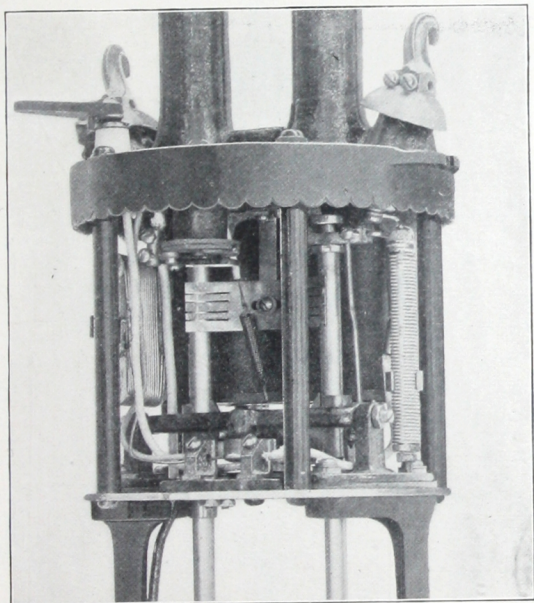
### GLOBE LOWERING DEVICE.

On the double lamp the globe holder is secured by a thumbscrew, the loosening of which permits the globe to be lowered until stopped by the nut on the center support rod. The globe holder on the single lamp is also secured by a thumbscrew and when lowered is supported by a chain attached to the lower frame of the lamp.

If desired the double lamp is supplied with drop tubes for the lower carbons. The globe holder of the single lamp for indoor use is fitted with a dust pan to prevent sparks and dust dropping through the globe holder.

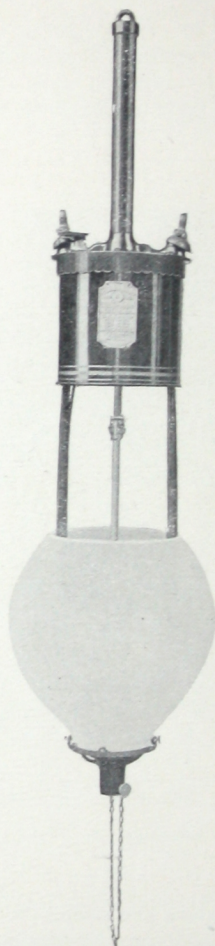
## CASING FOR PROTECTION OF MECHANISM.

When lamps are to be used indoors or in protected positions sheet iron casings are furnished, but if they are to be exposed to the weather, especially near salt water or in a location where corrosion of the iron is likely to take place, we recommend the use of a copper casing.



BRUSH ARC LAMP MECHANISM WITH CASING REMOVED.

The facility with which the casing on Brush lamps can be removed is a great convenience. By simply pressing a spring clip on the under side with one hand the casing is removed. All casings of the Improved Brush Lamps are finished in black enamel.



SINGLE CARBON  
IMPROVED BRUSH ARC LAMP

LEADING FEATURES

OF

IMPROVED

BRUSH ARC LAMPS

CASING FOR MECHANISM	Black Enamel finish. Iron or copper according to location of lamp. Quickly and easily removed. Practically dust proof.
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CHIMNEY AND CHIMNEY BASE	Cast in one piece with no joints for water or moisture to work through. Screw heads rest on raised bosses which can be removed and replaced without special facilities. Lamp does not require a hood for outdoor use.
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GLOBE LOWERING DEVICES	Globe lowers 12 inches on double lamps, 16 inches on single lamps. Globe holder held securely by thumbscrew.
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SUSPENSION HOOKS	Have petticoats to prevent water entering mechanism.
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**CLUTCH**

Positive feed, few parts, long surface. Operates as well with dented or dirty rod as with clean rod. No springs — only one screw and that controls adjustment.

**REMOVABLE  
GUIDE  
BUSHINGS**

Removable without affecting any other part of the lamp, except the rod. Renewed at slight expense. Has long bearing surface, thus giving longer life. No solder.

**CONTACT  
FOR ROD**

Five fingers across the rod. Keeps clean contact. Quickly removed by loosening one screw. No solder.

**INSULATION**

Reduced to smallest number of pieces practicable. No small lava bushings to break.

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#### REMOVABLE GUIDE BUSHINGS

Removable without affecting any other part of the lamp, except the rod. Renewed at slight expense. Has long bearing surface, thus giving longer life. No solder.

#### CONTACT FOR ROD

Five fingers across the rod. Keeps clean contact. Quickly removed by loosening one screw. No solder.

#### INSULATION

Reduced to smallest number of pieces practicable. No small lava bushings to break.

## MAGNETS

The use of an adjuster of fine or coarse wire enables same magnets to operate on either 6.6 ampere or 9.6 ampere circuits. Magnets easily removed by loosening screws and unfastening one spring connector.

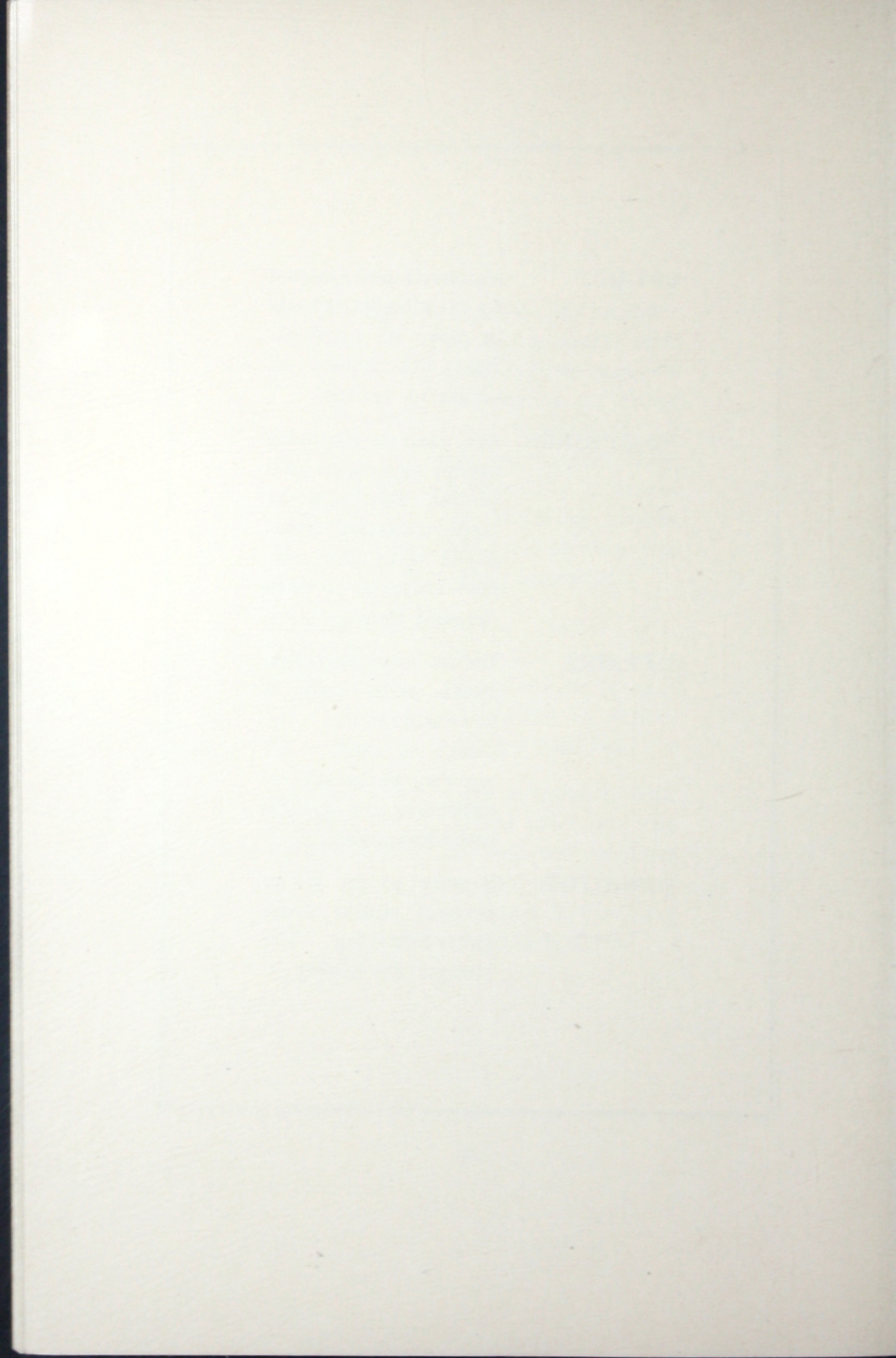
## REVERSIBLE CARBON ROD

Giving double life. When the rod is worn at one end reversal is equivalent to substituting a new rod.

## CARBON ROD EASILY REMOVED

The rod has a cap with slotted head and can be removed without disturbing any other part and while lamp hangs in position.

<b>CUT-OUT</b>	Automatic and assisted by auxiliary cut-out in cases of accident. Does not depend on action of springs.
<b>NO SPRINGS</b>	Are used in the lamp except two small connection springs of large capacity compared with the current required to pass through them.
<b>REPAIRS</b>	Lamp may be taken apart with only a screw-driver. No solder is used. All wearing parts are inexpensive and strictly interchangeable.
<b>DASH POT</b>	Simply an air pot to prevent undue noise and chattering. The plunger fits loosely.



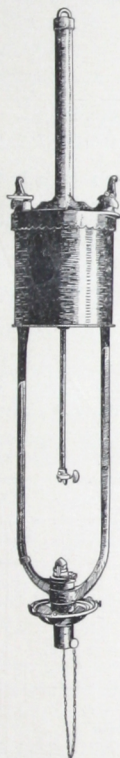
CATALOGUE  
OF PARTS OF  
IMPROVED  
BRUSH ARC LAMPS

These pages contain a complete list of the parts of the Improved Brush Arc Lamps, known as Form 2, both single and double carbon, and also a complete list of the parts of the Nos. 30 and 31 Brush Arc Lamps.

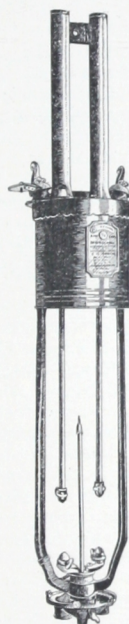
Reference to foot notes will indicate which parts of the Improved Lamps are superseded and will interchange with corresponding parts of the Old Style Nos. 30 and 31 Lamps. Parts not referred to by foot notes are the same for both Improved and Old Style lamps.

# IMPROVED BRUSH ARC LAMPS, FORM 2.

GENERAL ELECTRIC COMPANY



CAT. NO. 89340.



CAT. NO. 89341.

CAT. NO.	DESCRIPTION.	LIST PRICE.
89340	Brush Single Arc Lamp, Form 2, 1200 c.p., complete .	\$40.00
89394	Brush Single Arc Lamp, Form 2, 2000 c.p., complete .	40.00
89341	Brush Double Arc Lamp, Form 2, 1200 c.p., complete .	50.00
89395	Brush Double Arc Lamp, Form 2, 2000 c.p., complete .	50.00

# PARTS OF BRUSH ARC LAMPS, FORM 2.

GENERAL ELECTRIC COMPANY		
CAT. NO.	DESCRIPTION.	LIST PRICE.
89004	Casing (Iron) . . . . .	\$1.00
89356	Casing (Copper) . . . . .	2.00
89343	§Chimney for single lamp. <i>Supersedes No. 89005</i> . . . . .	1.50
89342	§Chimney for double lamp. <i>Supersedes No. 89087</i> . . . . .	2.00
89006	Chimney cap for No. 89343 . . . . .	.30
89007	Positive hanger hook, complete, includes parts indented below . . . . .	.35
89008	Negative hanger hook, complete, includes parts indented below . . . . .	.60
89344	*Nut ( $\frac{1}{8}$ "-16, $\frac{1}{4}$ " thick, Hex. Brass Nickeled, $\frac{3}{8}$ " across flats, cham. both sides). <i>Supersedes No. 10585</i> . . . . .	.05
10590	Washer ( $\frac{1}{8}$ " x 1" x .025" Gal. Iron) . . . . .	.03
10594	Lower fiber washer ( $\frac{1}{8}$ " x 1 $\frac{1}{8}$ " x .025") . . . . .	.02
10595	Upper fiber washer ( $\frac{9}{16}$ " x 1" x .250") . . . . .	.04
89345	*Wood bushing (Sp'l). <i>Supersedes and is interchangeable with No. 10596 but must be fitted</i> . . . . .	.04
15098	*Line binding screw (10-24, $\frac{3}{8}$ " R.H.Brass Nickeled). <i>Supersedes No. 7043</i> . . . . .	.02
2967	*Inside binding screw for No. 89008 (10-24, $\frac{1}{2}$ " R.H.Brass Nickeled). <i>Supersedes No. 1347</i> . . . . .	.01
89009	Switch blade, complete . . . . .	.10
89010	Hinge rivet, Brass Nickeled Sp'l . . . . .	.04
2967	*Stop screw (10-24, $\frac{1}{2}$ " R.H.Brass Nickeled). <i>Supersedes No. 11770</i> . . . . .	.01
89011	Switch contact block . . . . .	.05
2970	*Screw fastening No. 89011 in position (10-24, 1 $\frac{1}{8}$ " R.H.Brass Nickeled). <i>Supersedes No. 9014</i> . . . . .	.02
89079	Lava bushing for No. 89011 . . . . .	.08
659	Fiber bushing used with No. 2970 ( $\frac{3}{8}$ " x $\frac{3}{8}$ " x $\frac{1}{4}$ " hole), per 100 . . . . .	.50
89347	*Washer for No. 2970 ( $\frac{1}{4}$ " x $\frac{9}{16}$ " x .045" Brass Nickeled). <i>Supersedes No. 10592</i> . . . . .	.04
10589	Asbestos washer for No. 2970 ( $\frac{1}{4}$ " x 1" x .062") . . . . .	.01
10591	Galvanized iron washer for No. 2970 ( $\frac{1}{4}$ " x 1" x .025") . . . . .	.06
89348	†Starting resistance frame, wound complete, with clamp and screw (6-30, $\frac{1}{8}$ " R.H.Brass Nickeled—No. 3219). . . . .	.65
89349	†Starting resistance frame, bare, with clamp and screw (6-30, $\frac{9}{16}$ " R.H.Brass Nickeled—No. 3219) . . . . .	.40
89014	ADJUSTER FOR 1200 c.p. without clip . . . . .	.40
89339	ADJUSTER FOR 2000 c.p. without clip. <i>Must be used with magnets Nos. 89337, 89338</i> . . . . .	.50
	§Not interchangeable with superseded part.	
	*Interchangeable with superseded part.	
	†Supersedes but is not interchangeable with No. 89012.	

# PARTS OF BRUSH ARC LAMPS, FORM 2.—Continued.

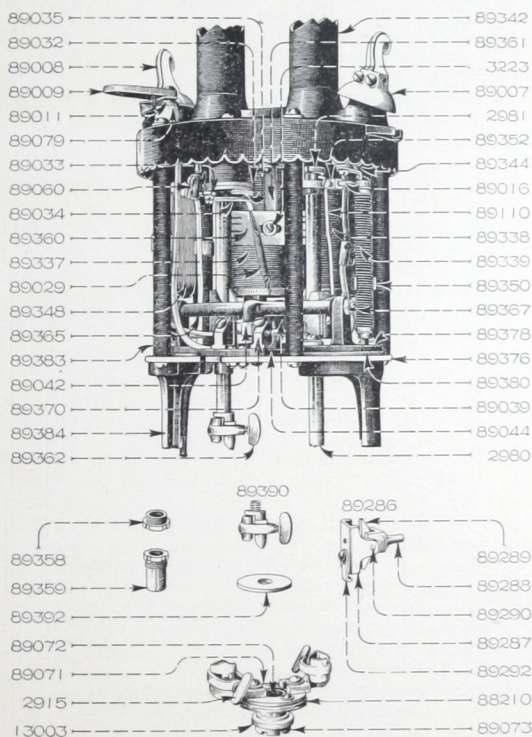
GENERAL ELECTRIC COMPANY		
CAT. NO.	DESCRIPTION.	LIST PRICE.
89350	*Slide clip for adjuster, includes two halves with screw (6-32, $\frac{3}{8}$ " Fill.H.Brass Nickeled — No. 89346). <i>Supersedes No. 89015</i> . . . . .	\$0.10
2968	*Screw fastening adjuster to positive hanger hook (10-24, $\frac{3}{8}$ " R.H.Brass Nickeled). <i>Supersedes No. 5521</i> . . . . .	.01
89016	Adjuster wire . . . . .	.03
89337	†Right-hand magnet, wound complete, for 1200 or 2000 c.p. . . . .	5.00
89338	†Left-hand magnet, wound complete, for 1200 or 2000 c.p. . . . .	5.00
3086	*Screw fastening magnets to chimney base (14-20, $\frac{3}{4}$ " R.H. Blued). <i>Supersedes No. 203</i> . . . . .	.01
89351	*Screw fastening magnets to base plate (14-20, $1\frac{1}{4}$ " R.H. Brass Nickeled). <i>Supersedes No. 10598</i> . . . . .	.02
89026	Magnet support . . . . .	.03
89027	Yoke for magnets . . . . .	.05
89028	Fiber insulation for yoke . . . . .	.02
10597	Screw fastening No. 89028 in position (4-32, $\frac{3}{16}$ " F.H. Brass) . . . . .	.01
89029	Connecting spring (Brass Nickeled) . . . . .	.02
89353	*Inside terminal for single lamp. <i>Supersedes No. 89030</i> . . . . .	.35
89352	*Inside terminal for double lamp. <i>Supersedes No. 89088</i> . . . . .	.60
3239	*Screw fastening No. 89353 to chimney base (14-20, $\frac{3}{4}$ " R.H.Brass Nickeled). <i>Supersedes No. 203</i> . . . . .	.02
2005	*Screw fastening No. 89352 to chimney base (14-20, 1" R.H. Brass Nickeled). <i>Supersedes No. 203</i> . . . . .	.02
89354	*Washer for Nos. 2005, 3239, ( $\frac{9}{32}$ " x $\frac{1}{16}$ " x .040" Iron Nickeled). <i>Supersedes No. 1078</i> . . . . .	.02
89355	*Fiber bushing used with Nos. 2005, 3239. <i>Supersedes No. 13001</i> . . . . .	.04
89089	*Insulating plate for No. 89352. <i>Supersedes lava plate</i> . . . . .	.03
89336	*Insulating plate for No. 89353. <i>Supersedes lava plate</i> . . . . .	.04
89357	*Long binding screw for Nos. 89352, 89353 (8-32, $\frac{1}{4}$ " R.H. Brass Nickeled). <i>Supersedes No. 708</i> . . . . .	.02
3223	*Short binding screw for No. 89352 (8-32, $\frac{1}{4}$ " R.H.Brass Nickeled). <i>Supersedes No. 708</i> . . . . .	.01
3234	*Short binding screw for No. 89353 (8-32, $\frac{3}{8}$ " R.H.Brass Nickeled). <i>Supersedes No. 708</i> . . . . .	.01
89358	UPPER REMOVABLE GUIDE BUSHING for carbon rod. <i>Can be used only with new inside terminals Nos. 89352, 89353</i> . . . . .	.06
	*Interchangeable with superseded part.	
	†Supersedes in pairs Nos. 89018 and 89022, 89019 and 89023, respectively.	

# PARTS OF BRUSH ARC LAMPS, FORM 2.—Continued.

GENERAL ELECTRIC COMPANY		
CAT. NO.	DESCRIPTION.	LIST PRICE.
89359	LOWER REMOVABLE GUIDE BUSHING for carbon rod. <i>Supersedes No. 89054, but can be used only with new armature lever bracket</i>	\$0.06
89360	CONTACT BRUSH, two for double lamp, one (bent double) for single lamp. <i>Supersedes and is interchangeable with No. 89031 if accompanied by support No. 89361</i>	.04
89361	Support for contact brush. <i>Used only with new contact brush No. 89360</i>	.06
3223	*Screw fastening Nos. 89360, 89361 in position (8-32, $\frac{1}{4}$ " R.H.Brass Nickeled). <i>Supersedes No. 1083</i>	.01
13371	*Washer for No. 3223 ( $\frac{3}{16}$ " x $\frac{1}{16}$ " x .040" Copper). <i>Supersedes No. 10593</i>	.02
89110	Balance wire for double lamp	.01
89032	AUXILIARY CUT-OUT MAGNET	.75
3086	*Screw fastening No. 89032 to chimney base (14-20, $\frac{3}{4}$ " R.H.Blued). <i>Supersedes No. 411</i>	.01
89033	Cut-out terminal plate for No. 89032	.03
89363	*Screw fastening No. 89033 to No. 89032 (8-32, $\frac{1}{4}$ " Fill.H. Brass Nickeled). <i>Supersedes No. 1083</i>	.02
89034	Cut-out armature	.08
89364	*Screw fastening No. 89034 to No. 89033 (6-32, $\frac{3}{8}$ " R.H. Brass Nickeled). <i>Supersedes No. 11770</i>	.02
89035	Contact strip for No. 89034	.03
9607	Screw fastening No. 89035 to No. 89032 (6-32, $\frac{1}{4}$ " F.H.Brass)	.01
89060	Connector for No. 89032, with screw	.08
3223	*Binding screw for No. 89060 (8-32, $\frac{1}{4}$ " R.H.Brass Nickeled). <i>Supersedes No. 5531</i>	.01
89036	Air dash pot, complete	.75
89037	Air dash pot hanger	.10
6068	*Screw fastening No. 89037 to chimney base (10-24, $\frac{1}{4}$ " R.H.Blued). <i>Supersedes No. 18</i>	.01
89038	Piston carrier	.08
15519	Spring cotter fastening piston to carrier ( $\frac{3}{32}$ " x $\frac{3}{4}$ " ), per 1000	4.00
89039	Armature	.30
2970	*Screw fastening Nos. 89038, 89039 to armature lever (10-24, $\frac{1}{4}$ " R.H.Brass Nickeled). <i>Supersedes Nos. 10884, 1506</i>	.02
89366	§Armature lever for single lamp. <i>Supersedes No. 89040</i>	.25
89365	§Armature lever for double lamp. <i>Supersedes No. 89091</i>	.35
89367	§Pivot screw for Nos. 89365, 89366 ( $\frac{1}{4}$ "-32, $\frac{7}{8}$ " pointed Headless Steel Nickeled). <i>Supersedes No. 89041</i>	.04
	*Interchangeable with superseded part.	
	§Not interchangeable with superseded part.	

# PARTS OF BRUSH ARC LAMPS, FORM 2.—Continued.

GENERAL ELECTRIC COMPANY



# PARTS OF BRUSH ARC LAMPS, FORM 2.—Continued.

CAT. NO.	GENERAL ELECTRIC COMPANY DESCRIPTION.	LIST PRICE.
89368	§Nut for No. 89367 (4-32, $\frac{5}{16}$ " thick, Hex. Brass Nickeled, $\frac{1}{16}$ " across flats, cham. both sides). <i>Supersedes No. 5121</i> . . . . .	\$0.03
89042	CUT-OUT BAR . . . . .	.15
89082	Lava bushing for bar (Sp'l) . . . . .	.10
89369	*Screw fastening bar to armature lever (10-24, $\frac{7}{8}$ " Fill H. Steel Nickeled). <i>Supersedes No. 113</i> . . . . .	.02
89370	*Cut-out post for bar, with binding screw (10-24, $\frac{7}{8}$ " R.H. Brass Nickeled-No. 2968). <i>Supersedes No. 89043</i> . . . . .	.25
89371	*Screw fastening No. 89370 to base plate (10-24, $\frac{1}{2}$ " R.H. Steel Nickeled). <i>Supersedes No. 18</i> . . . . .	.02
89372	*Washer for No. 89371 ( $\frac{3}{16}$ " x $\frac{7}{8}$ " x .033" Copper Nickeled). <i>Supersedes No. 10593</i> . . . . .	.01
89044	Vulcabeston insulating block . . . . .	.25
88421	*Screw fastening No. 89044 to base plate (10-24, $\frac{7}{8}$ " R.H. Steel Nickeled). <i>Supersedes No. 18</i> . . . . .	.01
89372	Washer for No. 88421 ( $\frac{3}{16}$ " x $\frac{7}{8}$ " x .033" Copper Nickeled)	.01
89373	*Nut for No. 88421 (10-24, $\frac{5}{16}$ " thick, Hex. Brass Nickeled, $\frac{3}{8}$ " across flats, cham. both sides). <i>Supersedes No. 88038</i> . . . . .	.03
89286	CLUTCH, complete . . . . .	.40
89287	Body . . . . .	.10
89288	Lever . . . . .	.10
89289	Shoe . . . . .	.03
89290	Hinge rivet for lever ( $\frac{1}{8}$ " x $\frac{1}{8}$ ") . . . . .	.03
89291	Hinge rivet for shoe ( $\frac{1}{8}$ " x $\frac{1}{8}$ ") . . . . .	.01
89292	Trip finger . . . . .	.02
89374	*Screw fastening trip to body (6-32, $\frac{3}{16}$ " R.H. Brass Nickeled). <i>Supersedes No. 9603</i> . . . . .	.02
89375	*Washer for No. 89374 ( $\frac{3}{16}$ " x $\frac{1}{2}$ " x .035" Copper Nickeled). <i>Supersedes No. 9934</i> . . . . .	.02
89377	§Base plate for single lamp. <i>Supersedes No. 89053</i> . . . . .	.65
89376	§Base plate for double lamp. <i>Supersedes No. 89093</i> . . . . .	.65
89379	†Armature lever bracket for single lamp . . . . .	.25
89378	†Armature lever bracket for double lamp . . . . .	.30
89381	†Leatheroid plate for No. 89379, includes two halves . . . . .	.20
89380	†Leatheroid plate for No. 89378, includes two halves . . . . .	.20
*Interchangeable with superseded part.		
§Not interchangeable with superseded part.		
†These parts can be used only on the new lamp, as the entire construction of the old lamp differs where they are used.		

# PARTS OF BRUSH ARC LAMPS, FORM 2.—Continued.

GENERAL ELECTRIC COMPANY		
CAT. NO.	DESCRIPTION.	LIST PRICE.
2005	§Screw fastening bracket and base plate to lower frame (14-20, 1" R.H.Brass Nickeled). <i>Supersedes No. 1758</i> . . . . .	\$0.02
89382	§Fiber bushing used with No. 2005. <i>Supersedes No. 13004</i> . . . . .	.05
89347	*Washer for No. 2005 ( $\frac{1}{4}$ " x $\frac{9}{16}$ " x .045" Brass Nickeled). <i>Supersedes No. 658</i> . . . . .	.04
89390	§UPPER CARBON HOLDER for $\frac{1}{16}$ " and $\frac{1}{8}$ " carbons for reversible rod. <i>Supersedes No. 89064</i> . . . . .	.20
89391	§Upper carbon holder for $\frac{1}{16}$ " and $\frac{1}{8}$ " carbons for reversible rod. <i>Supersedes No. 89064</i> . . . . .	.20
89392	†Flange for upper carbon holder. <i>Must be ordered specially</i> . . . . .	.15
89362	§Thumbscrew for Nos. 89390, 89391 (12-24 Brass Nickeled). <i>Supersedes No. 13007</i> . . . . .	.04
2980	*Reversible carbon rod (20 $\frac{1}{2}$ " long). <i>Supersedes No. 89061</i> . . . . .	.90
2981	§Rod cap, with slotted head. <i>Supersedes No. 89062</i> . . . . .	.08
89383	†Supporting pillar. <i>Supersedes Nos. 89012, 89013</i> . . . . .	.25
3086	§Screw fastening No. 89383 to chimney base (14-20, $\frac{3}{4}$ " R.H.Blued). <i>Supersedes No. 98</i> . . . . .	.01
17637	†Screw fastening No. 89383 to base plate (14-20, $\frac{1}{2}$ " R.H.Blued), per 100 . . . . .	.75
89384	†Lower frame, wired. <i>Supersedes No. 89300</i> . . . . .	1.50
3216	*Binding screw for lower end of frame wire (8-32, $\frac{5}{16}$ " R.H.Brass Nickeled). <i>Supersedes No. 5531</i> . . . . .	.01
13371	*Washer for No. 3216 ( $\frac{3}{16}$ " x $\frac{7}{8}$ " x .040" Copper Nickeled). <i>Supersedes No. 9715</i> . . . . .	.02
89403	Globe holder for single lamp, complete . . . . .	.85
89385	Globe holder complete for double lamp, includes globe holder support rod with Sp'l nut, supporting thumbscrew and globe clamping screws . . . . .	1.00
89307	Globe holder body for double lamp, with globe clamping screws . . . . .	.90
89387	*Globe holder support screw for single lamp (Brass Nickeled thumbscrew Sp'l). <i>Supersedes No. 89304</i> . . . . .	.10
89386	*Globe holder support screw for double lamp (Brass Nickeled thumbscrew Sp'l). <i>Supersedes No. 89308</i> . . . . .	.10
*Interchangeable with superseded part.		
§Not interchangeable with superseded part.		
†These parts can be used only on the new lamp, as the entire construction of the old lamp differs where they are used.		

# PARTS OF BRUSH ARC LAMPS, FORM 2.—Concluded.

GENERAL ELECTRIC COMPANY		
CAT. NO.	DESCRIPTION.	LIST PRICE.
89388	*Globe clamping thumbscrew (8-32, $\frac{1}{2}$ " Brass Nickerled). <i>Supersedes No. 13008</i> . . . . .	\$0.02
3216	*Screw fastening globe in position (8-32, $\frac{5}{16}$ " R.H. Blued). <i>Supersedes No. 695</i> . . . . .	.01
89309	Globe holder support rod for double lamp . . . . .	.10
89310	Nut for rod (Sp'l) with retaining washer . . . . .	.02
89305	Globe holder chain, with retaining washer for single lamp . . . . .	.04
89302	Globe holder shank for single lamp . . . . .	.25
1400	Screw fastening No. 89302 to lower frame (14-20, $\frac{1}{2}$ " R.H.Brass) . . . . .	.02
89306	Dust pan (for indoor single lamp only) . . . . .	.20
89311	Cross bar for rod . . . . .	.05
89315	Screw fastening cross bar to lower frame (14-20, $\frac{1}{2}$ " Headless Brass) . . . . .	.02
89071	Lower carbon holder flange . . . . .	.30
88210	Mica washer for No. 89071 (1" x 2" x $\frac{3}{64}$ " thick) . . . . .	.04
89072	Lower carbon holder sleeve . . . . .	.10
13003	Lava bushing for No. 89072 . . . . .	.10
89073	Nut for No. 89072 (Sp'l) . . . . .	.08
89312	Drop tube for globe holder for double lamp. <i>Special</i> . . . . .	.05
89313	Tube insulation for No. 89312. <i>Special</i> . . . . .	.02
89314	Insulating washer for No. 89312. <i>Special</i> . . . . .	.02
89335	LOWER CARBON HOLDER complete, for $\frac{7}{16}$ " and $\frac{1}{2}$ " carbons . . . . .	.25
88211	Body for No. 89335 . . . . .	.05
89393	*Clamp for No. 89335. <i>Supersedes No. 89113</i> . . . . .	.06
2915	Thumbscrew for No. 89335 (12-24, $\frac{5}{8}$ " Brass Nickerled). <i>Supersedes No. 13007</i> . . . . .	.06
89389	*Screw fastening No. 89335 to flange (14-20, $\frac{1}{2}$ " R.H. Brass Nickerled). <i>Supersedes No. 1400</i> . . . . .	.02
89347	*Washer for No. 89389 ( $\frac{1}{4}$ " x $\frac{9}{16}$ " x .043"). <i>Supersedes No. 88166</i> . . . . .	.04
	Asbestos covered internal connection wire for mechanism, approximately 2 feet.	
89060	Two-way connector for wire, with screws . . . . .	.08
3223	*Binding screw for No. 89060 (8-32, $\frac{1}{4}$ " R.H.Brass Nickerled). <i>Supersedes No. 5531</i> . . . . .	.01
	<i>*Interchangeable with superseded part.</i>	

# BRUSH ARC LAMPS, NOS. 30 AND 31.

GENERAL ELECTRIC COMPANY



CAT. NO. 80000.



CAT. NO. 80003.

CAT. NO.	DESCRIPTION.	LIST PRICE.
80000	No. 30 Arc Lamp (Single) 1200 candle-power, complete .	\$40.00
80001	No. 30 Arc Lamp (Single) 2000 candle-power, complete .	45.00
80003	No. 31 Arc Lamp (Double) 1200 candle-power, complete .	50.00
80004	No. 31 Arc Lamp (Double) 2000 candle-power, complete .	55.00

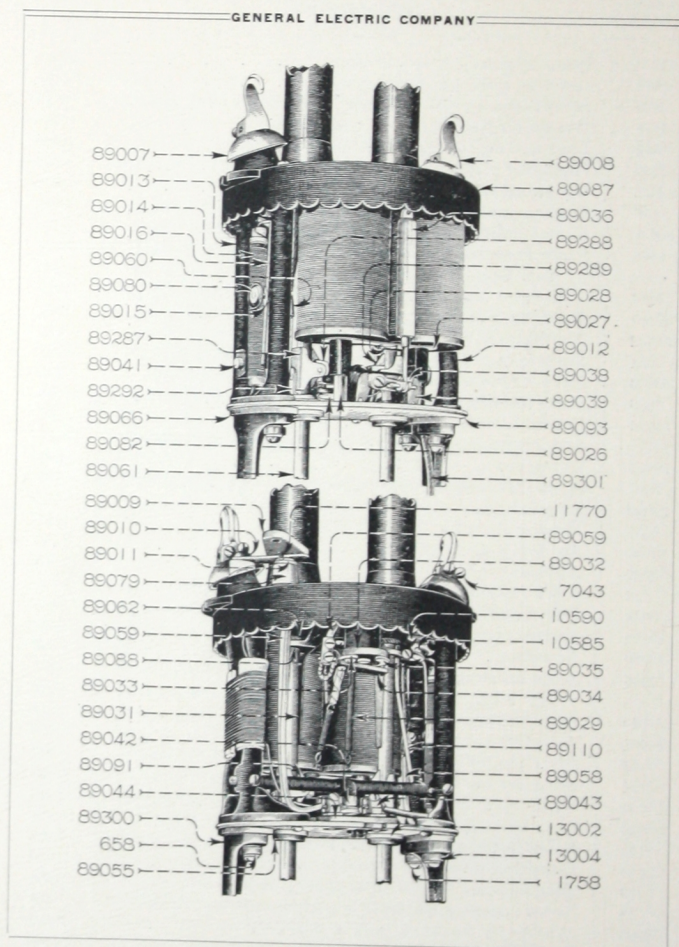
# PARTS OF BRUSH ARC LAMPS, NOS. 30 AND 31.

GENERAL ELECTRIC COMPANY		
CAT. NO.	DESCRIPTION.	LIST PRICE.
89004	Casing (Iron) . . . . .	\$1.00
89056	Casing (Copper) . . . . .	2.00
89005	Chimney for No. 30 lamp . . . . .	2.50
89087	Chimney for No. 31 lamp . . . . .	2.00
89006	Chimney cap for No. 30 lamp . . . . .	.30
89007	Positive hanger hook, complete . . . . .	.35
89008	Negative hanger hook, complete . . . . .	.60
10585	Brass nut for Nos. 89007, 89008 ( $\frac{1}{2}$ "-16 Hex.) . . . . .	.05
10590	Washer under No. 10585 ( $\frac{1}{4}$ " x $1\frac{1}{2}$ " x .025" Gal. Iron) . . . . .	.03
10594	Lower fiber washer ( $\frac{1}{4}$ " x $1\frac{1}{2}$ " x .125") . . . . .	.02
10596	Wood bushing ( $1\frac{1}{2}$ " x $\frac{3}{4}$ " x $\frac{1}{8}$ " hole) . . . . .	.04
10595	Upper fiber washer ( $\frac{1}{4}$ " x $1\frac{1}{2}$ " x .250") . . . . .	.04
7043	Line binding screw for hook (10-24, $\frac{5}{8}$ " R.H.Brass) . . . . .	.02
1347	Inside binding screw for No. 89008 (10-24, $\frac{1}{2}$ " R.H.Brass) . . . . .	.02
89009	Switch blade, complete . . . . .	.10
89010	Hinge rivet for blade (Brass Sp'l) . . . . .	.04
11770	Stop screw for switch blade (6-32, $\frac{3}{8}$ " R.H.Brass) . . . . .	.01
89011	Switch contact block . . . . .	.05
9614	Screw for No. 89011 (10-24, $1\frac{1}{2}$ " R.H.Brass) . . . . .	.02
89079	Lava bushing for No. 89011 (Sp'l) . . . . .	.08
10589	Washer for No. 9614 ( $\frac{1}{4}$ " x $1\frac{1}{2}$ " x .062" Asbestos) . . . . .	.01
10592	Washer for No. 9614 ( $\frac{1}{4}$ " x $\frac{1}{2}$ " x .050" Brass) . . . . .	.05
10591	Washer for No. 9614 ( $\frac{1}{4}$ " x $1\frac{1}{2}$ " x .025" Gal. Iron) . . . . .	.06
89012	Right-hand standard, wound, complete . . . . .	1.00
89013	Left-hand standard . . . . .	.40
98	Screw fastening standards to chimney base (10-24, $\frac{5}{8}$ " R.H.) . . . . .	.02
893	Screw fastening standards to base plate (10-24, $\frac{5}{8}$ " R.H.) . . . . .	.01
89014	German silver adjuster . . . . .	.40
89015	Slide clip for adjuster . . . . .	.02
89017	Screw for slide (Brass Sp'l) . . . . .	.04
89080	Brass thumb nut for No. 89017 (Sp'l) . . . . .	.04
5521	Supporting screw for adjuster (10-24, $\frac{5}{8}$ " R.H.Brass) . . . . .	.01
89016	Adjuster wire . . . . .	.03
89018	Right-hand magnet spool, 1200 candle-power . . . . .	5.00
89019	Right-hand magnet spool, 2000 candle-power . . . . .	5.00
89022	Left-hand magnet spool, 1200 candle-power . . . . .	5.00
89023	Left-hand magnet spool, 2000 candle-power . . . . .	5.00
203	Screw fastening magnets to chimney base (14-20, $\frac{3}{4}$ " R.H.) . . . . .	.01
10598	Screw fastening magnets to base (14-20, $1\frac{1}{2}$ " F.H.Brass) . . . . .	.01
89026	Magnet support . . . . .	.03
89027	Yoke for magnet spools . . . . .	.05
89028	Fiber insulation for yoke . . . . .	.02
10597	Screw fastening No. 89028 in position (4-32, $\frac{3}{16}$ " F.H.Brass) . . . . .	.01
89029	Connecting spring . . . . .	.02

## PARTS OF BRUSH ARC LAMPS, NOS. 30 AND 31.—Continued.

GENERAL ELECTRIC COMPANY		
CAT. NO.	DESCRIPTION.	LIST PRICE.
89030	Inside terminal for No. 30 lamp . . . . .	\$0.30
89088	Inside terminal for No. 31 lamp . . . . .	.40
203	Screw fastening Nos. 89030, 89088 in position (14-20, $\frac{3}{4}$ " R.H.)	.01
1078	Washer for No. 203 ( $\frac{1}{4}$ " x $\frac{1}{8}$ " x .065" Brass) . . . . .	.02
13001	Lava bushing for Nos. 89030, 89088 . . . . .	.10
89089	Insulating plate under No. 89088 . . . . .	.03
89336	Insulating plate under No. 89030 . . . . .	.04
708	Binding screw for Nos. 89030, 89088 (8-32, $\frac{3}{8}$ " R.H.Brass) .	.01
89031	Contact brush, one for No. 30 lamp, two for No. 31 lamp .	.15
1083	Screw fastening No. 89031 to Nos. 89030, 89088 (8-32, $\frac{1}{4}$ " R.H.Brass) . . . . .	.01
10593	Washer for No. 1083 ( $\frac{7}{32}$ " x $\frac{7}{16}$ " x .035" Copper) . . . . .	.02
89110	Balancing wire . . . . .	.01
89032	Auxiliary cut-out magnet, complete . . . . .	.75
411	Screw fastening No. 89032 in position (14-20, $\frac{3}{8}$ " R.H.), per 100	.75
89033	Cut-out terminal plate for No. 89032 . . . . .	.03
1038	Screw fastening No. 89033 in position (8-32, $\frac{1}{4}$ " R.H.Brass)	.01
89034	Cut-out armature . . . . .	.08
11770	Screw fastening No. 89034 in position (6-32, $\frac{3}{8}$ " R.H. Brass)	.01
89035	Contact strip for armature . . . . .	.03
9607	Screw fastening No. 89035 in position (6-32, $\frac{1}{4}$ " F.H.Brass)	.01
89060	Connector for No. 89032 with two screws . . . . .	.08
5531	Binding screw for No. 89060 (8-32, $\frac{5}{16}$ " R.H.Brass) . . . .	.01
89036	Air dash pot, complete . . . . .	.75
89037	Air dash pot hanger . . . . .	.10
18	Screw fastening hanger in position (10-24, $\frac{1}{2}$ " R.H.) . . .	.01
89038	Piston carrier . . . . .	.08
15519	Spring cotter fastening piston to carrier ( $\frac{3}{8}$ " x $\frac{3}{4}$ "), per 1000	4.00
89039	Armature . . . . .	.30
1506	Screw fastening Nos. 89038, 89039 to armature lever (10-24, $\frac{1}{8}$ " R.H.) . . . . .	.02
89040	Armature lever for No. 30 lamp . . . . .	.40
89091	Armature lever for No. 31 lamp . . . . .	.50
89041	Pivot pin for lever . . . . .	.10
5121	Set screw for No. 89041 (10-24, $\frac{3}{4}$ " R.H.Brass) . . . . .	.02
89042	CUT-OUT BAR . . . . .	.15
89082	Lava bushing for bar (Sp'l) . . . . .	.10
113	Screw fastening bar to lever (10-24, $\frac{3}{4}$ " R.H.) . . . . .	.02
89043	Cut-out post for bar . . . . .	.10
708	Binding screw for No. 89043 (8-32, $\frac{3}{8}$ " R.H.Brass) . . . .	.01
18	Screw fastening No. 89043 in position (10-24, $\frac{1}{2}$ " R.H.) . .	.01
10593	Washer for No. 18 ( $\frac{7}{32}$ " x $\frac{7}{16}$ " x .035" Copper) . . . . .	.02
89044	Vulcabeston insulating block . . . . .	.25
18	Screw fastening No. 89044 to base plate (10-24, $\frac{1}{2}$ " R.H.) .	.01

PARTS OF BRUSH ARC LAMPS, NOS. 30 AND 31.—Continued.



## PARTS OF BRUSH ARC LAMPS, NOS. 30 AND 31.—Continued.

GENERAL ELECTRIC COMPANY		
CAT. NO.	DESCRIPTION.	LIST PRICE.
89028	Nut for No. 18 (10-24 Hex. Brass cham. both sides)	\$0.08
89286	Clutch, complete	.40
89287	Body	.10
89288	Lever	.10
89289	Shoe	.03
89290	Hinge rivet for lever ( $\frac{1}{8}$ " x $\frac{1}{4}$ ")	.03
89291	Hinge rivet for shoe ( $\frac{1}{8}$ " x $\frac{1}{16}$ ")	.01
89292	Trip finger	.02
9603	Screw fastening trip to body (6-32, $\frac{5}{16}$ " R.H.Brass), per 100	.50
9604	Washer for No. 9603 ( $\frac{5}{16}$ " x $\frac{1}{4}$ " x .035" Copper)	.01
89053	Base plate for No. 30 lamp	.75
89053	Base plate for No. 31 lamp	.75
89054	Brass guide bushing for rod (Sp'l)	.13
89055	Nut for bushing (Brass Sp'l)	.06
13002	Lava bushing	.10
89212	Asbestos washer ( $\frac{1}{4}$ " x 1" x .025")	.01
89061	Rod	.75
89062	Rod top	.15
89063	Upper carbon holder flange	.20
5521	Screw fastening upper carbon holder to flange (10-24, $\frac{1}{2}$ " R.H.Brass)	.02
89064	UPPER CARBON HOLDER, complete, for $\frac{5}{16}$ " to $\frac{1}{2}$ " carbons	.25
89112	Body for No. 89064	.10
89335	LOWER CARBON HOLDER, complete	.25
89211	Body for No. 89335	.05
89113	Clamp for Nos. 89064, 89335	.06
13007	Thumbscrew for No. 89113	.06
1400	Screw fastening No. 89335 to carbon holder flange (14-20, $\frac{1}{2}$ " R.H.Brass)	.02
88166	Washer for No. 1400 ( $\frac{1}{4}$ " x $\frac{5}{16}$ " x .043" Brass), per 100	.50
89071	Lower carbon holder flange	.30
88210	Mica washer for No. 89071 (1" x 2" x $\frac{5}{16}$ " thick)	.04
89072	Sleeve	.10
89073	Nut for sleeve (Sp'l)	.08
89081	Lava washer (Sp'l)	.10
13003	Lava bushing	.10
89300	LOWER FRAME, bare	1.50
1758	Screw fastening frame in position (14-20, $\frac{1}{2}$ " R.H.)	.01
658	Washer for No. 1758 ( $\frac{1}{4}$ " x $\frac{5}{16}$ " x .050" Brass)	.01
13004	Fiber bushing	.04
89066	Fiber plate	.10
89301	Negative frame wire	.10

# PARTS OF BRUSH ARC LAMPS, NOS. 30 AND 31.—Concluded.

GENERAL ELECTRIC COMPANY		
CAT. NO.	DESCRIPTION.	LIST PRICE.
5531	Binding screw for lower end of negative frame wire (8-32, $\frac{5}{16}$ " R.H.Brass) . . . . .	\$0.01
9715	Washer for No. 5531 ( $\frac{7}{32}$ " x $\frac{1}{16}$ " x .040" Copper) . . . . .	.01
89403	Globe holder, complete, Form 2, for No. 30 lamp . . . . .	.85
89385	Globe holder, complete, Form 2, for No. 31 lamp . . . . .	1.00
89308	Globe holder support screw for No. 89385 (Brass thumb-screw Sp'l) . . . . .	.10
89304	Globe holder support screw for No. 89403 (Brass thumb-screw Sp'l) . . . . .	.10
89309	Globe holder support rod for No. 89385 . . . . .	.10
89310	Nut for rod . . . . .	.02
89311	Cross bar supporting rod . . . . .	.05
89315	Screw fastening cross bar in position (Brass Sp'l) . . . . .	.02
13008	Globe clamping thumbscrew (8-32, $\frac{7}{16}$ " Brass) . . . . .	.05
695	Globe clamping machine screw (8-32, $\frac{3}{8}$ " R.H.) . . . . .	.01
89302	Globe holder shank for No. 30 lamp . . . . .	.20
1400	Screw fastening No. 89302 to lower frame (14-20, $\frac{1}{2}$ " R.H. Brass) . . . . .	.02
89305	Globe holder chain, with retaining washer for No. 30 lamp . . . . .	.04
89306	Dust pan (for indoor No. 30 lamp only) . . . . .	.20
89312	Brass drop tube for No. 89385 . . . . .	.05
89313	Tube insulator for No. 89385 . . . . .	.02
89314	Insulating washer for No. 89385 . . . . .	.02
	Asbestos covered internal connection wire, for mechanism, approximately 2 feet.	
	NOTE.—A number of lamps have been shipped with Form 1 globe holders. When this globe holder is used the lower frame also differs from that used with lamps as now manufactured.	
89094	Lower frame . . . . .	1.50
89096	Globe holder, Form 1, complete . . . . .	2.50
89097	Tube insulation . . . . .	.15
89098	Insulation washer (Sp'l) . . . . .	.15
89102	Globe holder support screw (Sp'l) . . . . .	.10
89099	Support dog . . . . .	.10
89100	Dog pivot screw (Sp'l) . . . . .	.10
89101	Dog spring . . . . .	.04
13008	Globe clamping thumbscrew (8-32, $\frac{7}{16}$ " Brass) . . . . .	.05
695	Screw fastening globe in position (8-32, $\frac{3}{8}$ " R.H.) . . . . .	.01
89076	Brass locking strip for No. 13008 . . . . .	.15
89077	Globe holder chain . . . . .	.05
89078	Globe holder hook . . . . .	.04
13006	Rivet for chain . . . . .	.03

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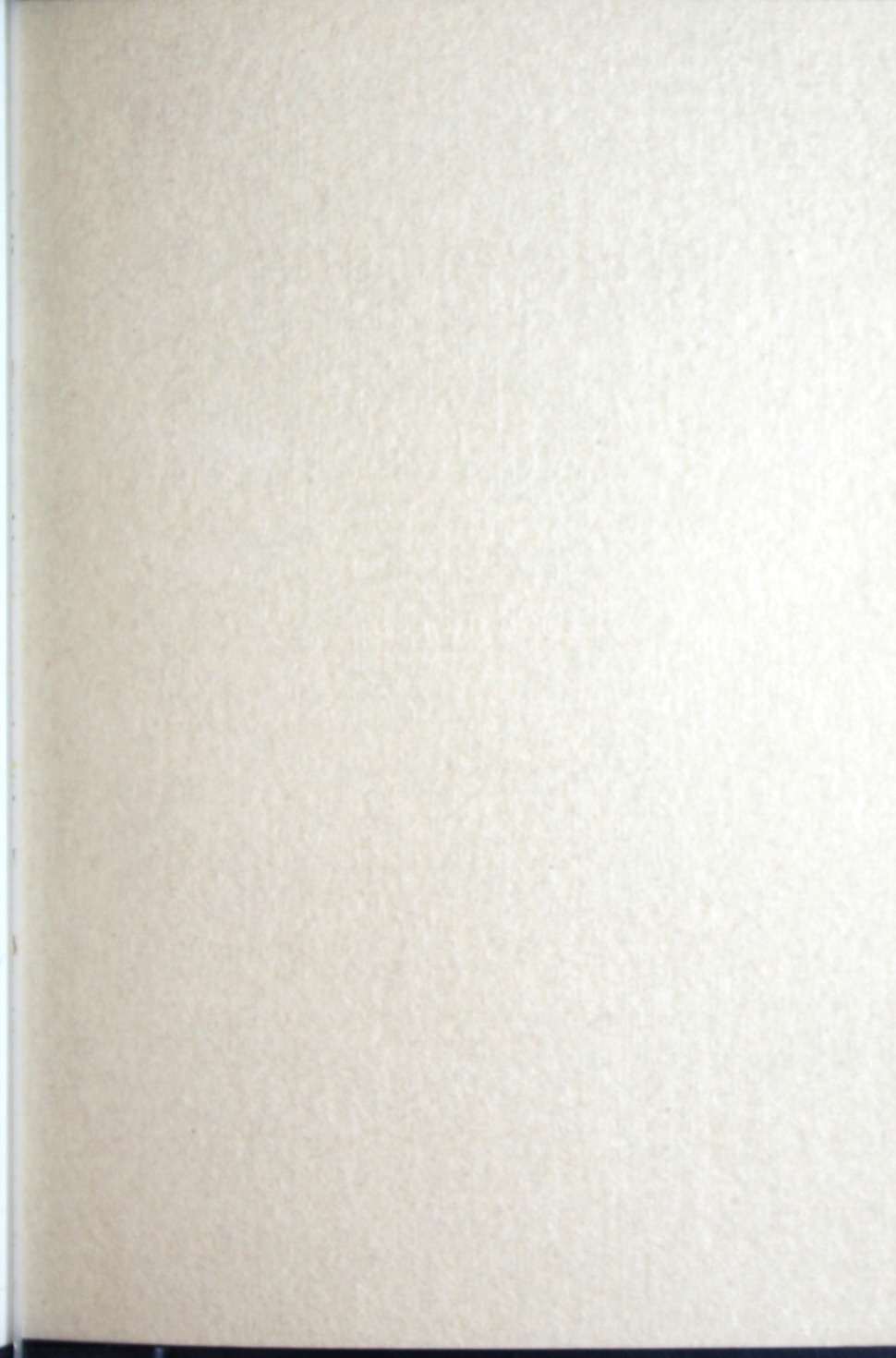
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